

REMARKS

This is in response to a restriction requirement dated 3/5/97 wherein restriction to one of the following inventions is required:

Group 1: claims 1-36 drawn to electrical connectors; and

Group 2: claims 37-42 drawn to method of fabricating electrical connectors

ELECTION

Applicant hereby elects Group 1, claims 1-36 for further prosecution in this case, without traverse.

PRELIMINARY COMMENTS

The parent case paragraph has been moved, updated and amended. Two corresponding (to US cases) PCT cases are now cited. A SUPPLEMENTAL DECLARATION will be filed, in due course.

This case has its own counterpart PCT patent application, namely PCT/US95/14844 filed 13 Nov 95. The specification and claims of the PCT and US cases are essentially identical.

A WRITTEN OPINION by the ISO/US was issued in that case. A courtesy copy of the response to the WRITTEN OPINION was filed in this case on 1/23/97.

As noted in the PCT WRITTEN OPINION:

claims 8-34, 37-42 were considered to have novelty; and

claim 34 was considered to have inventive step

in light of the references set forth in the PCT search report, a courtesy copy of which is enclosed herewith.

CLAIM AMENDMENTS PRESENTED HEREIN

The preamble of Claim 34 is amended herewith to clarify that the probes (probe elements) whose tips are planarized are part of a probe card assembly rather than an interposer assembly. The

salient feature that the orientation of the support may be adjusted to planarize the tips of the probe elements without altering the orientation of the probe card remains unaltered.

Claims 8 and 30 are amended herewith to clarify that the resilient contact structures are "entirely metallic".

Claim 33 is amended herewith to correct the preamble recitation.

NEWLY-PRESENTED CLAIMS

Dependent claims elaborating on additional features of the favorably-viewed (by the PCT) subject matter of **claim 34** are presented herewith in **claims 43-50**. No new matter is entered. For example, the feature claimed in newly-presented **claim 49** is shown at **Figure 5B** and discussed at the paragraph bridging pages 59-60 of the specification.

For example, the feature claimed in newly-presented **claim 50** is shown in **Figure 7** and discussed at pages 64-67 of the specification, particularly at page 66, lines 20-28.

COMMENTS CONCERNING ELECTED CLAIMS 1-33

Claims 1-33 (also **claim 34**) are elected herewith, and have not yet been subject to substantive examination. It should be noted, however, that in the PCT WRITTEN OPINION, and response thereto:

Claims 8-34 were considered (by the PCT) to have novelty

Claims 8-29 are directed to a probe card assembly.

Claims 30-33 are directed to a probe card kit.

Claim 34 is directed to a method of planarizing the tips of the probe elements.

Claims 1-7, 35-36 were considered (by the PCT) to lack novelty, as follows:

Claims 1-7 were considered (by the PCT) to lack novelty as being anticipated by Ardezzzone (USP 3,832,632) which discloses resilient contact structures on a space transformer having first and second terminals.

Claims 1-7 are directed to a space transformer component of a probe card assembly. Resilient contact structures are mounted directly to the terminals on the top surface of the space transformer, are inherently resilient, and exhibit resiliency along their entire length.

Ardezzzone's probe arms 15 are fixed in place by means of an underlying support member 22 which is a thermosetting epoxy. Resiliency resides only in the tips 17 at the ends of the probe arms. "The tips are comprised of a compressible, elastic material ..." (column 5, lines 57-64), such as "silver and rhodium particles suspended in a silicon rubber base material" (column 6, lines 27-29).

In claim 2, the tip structures mounted to the ends of the resilient contact structures are, in and of themselves, not resilient.

In claim 3, it is noted that the resilient contact structures are the "composite interconnection elements" as described in detail in the specification of the application.

Claims 35-36 were considered (by the PCT) to lack novelty as being anticipated by Crowley (USP 4,983,907) which discloses a composite interconnection element with a pre-fabricated tip structure.

Claims 35-36 are directed to a resilient contact structure having a pre-fabricated tip structure joined to its end.

Crowley's so-called composite interconnection element is not taught or suggested by the "composite interconnection element" as defined by the specification of the present application.

Claims 1-33, 35-42 were considered (by the PCT) to lack inventive step

Claims 8-33 and 37-42 were considered (by the PCT) to lack an inventive step as being obvious over Wickersham (USP 3,654,585) in a first set in view of Ardezzone (3,832,632) or Kwon, et al. (5,187,020) in a second set. The first set discloses an interposer in combination with a space transformer wherein solid contacts are used. The second set discloses contact apparatus having resilient contacts. To utilize resilient contacts in the apparatus of the first set in place of the structure utilized would not involve an inventive step in view of the teachings of the second set.

Claims 8-29 are directed to a probe card assembly. It should be noted that **claim 22** is similar to PCT-approved **claim 34**. It should also be noted that **claims 23-26** depend from **claim 22**.

Claims 30-33 are directed to a probe card kit.

Wickersham discloses an array of spring pin contact elements 46 of a scale suitable for making contact with printed circuit boards.

The present invention discloses resilient (spring) contact elements which are scaled to make contact with integrated circuit devices.

Kwon, et al. discloses a compliant contact pad including a compliant, electrically conductive polymer in a substrate. The contact pad is a "sandwich" of a metallic base and upper surface with polymer disposed therebetween.

The resilient contact structures of the present invention are entirely metallic.

The present invention is novel and includes an inventive step. For example, the resilient contact structures of claims 8 and 30 can be considered to be entirely metallic and of a scale that is suitable for making contact with integrated circuit devices.

Regarding the method of fabricating tip structures for ends of contact structures set forth in claim 37, the conductive materials can be considered to be metallic materials rather than polymer.

CLAIM COUNT AND FEE CALCULATION

This case was filed with:

22 excess total claims

3 excess independent claims

Remaining after entry of this amendment, there are:

24 excess total claims

5 excess independent claims

A fee (\$44) for two additional excess total claims is enclosed herewith.

CONCLUSION

No new matter is entered by this amendment

The claims should be allowed.

For the applicant,

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4-3-97

date

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